a1

11. (amended) The cell transduction vector of claim 9, wherein the vector nucleic acid further encodes a second viral inhibitor, wherein expression of the second viral inhibitor is controlled by the IRES.

a2

37. (amended) A method of transducing a cell with a nucleic acid encoding a viral inhibitor comprising contacting the cell with the cell transduction vector of claim 1, wherein the cell is transduced *in vitro*.

38. (amended) A method of inhibiting the growth of HIV in a cell comprising transducing the cell with the cell transduction vector of claim 1, wherein the cell is transduced *in vitro*.

a3

40. (amended) The method of claim 38, wherein the cell is selected from the group of cells consisting of transferrin receptor$^+$ cells, CD4$^+$ cells and CD34$^+$ hematopoietic stem cells.

REMARKS

With entry of the present amendment, claims 1-35, 37, 38, and 40-42 are pending in the application. Claims 36 and 39 have been canceled and claims 11, 37, 38, and 40 have been amended. The amendments to the claims add no new matter.

Claim 11 has been amended to recite a second viral inhibitor wherein expression of the second viral inhibitor is controlled by the IRES. Support for the amendment can be found throughout the application, *e.g.*, the specification on page 28, line 32 through page 29, line 14.

Claim 37 has been amended to incorporate the language of canceled claim 36.

Claim 38 has been amended to recite transducing a cell, wherein the cell is transduced *in vitro*. Support for the amendment can be found throughout the application, *e.g.*, on page 30, lines 7-8.

Claim 40 has been amended to provide dependency in view of the cancellation of claim 39.

For convenience, the rejections are addressed in the order presented in the Office Action dated February 16, 2001.

1. The invention

The present invention provides cell transduction vectors for inhibiting viral replication and growth of cancer cells in cells transduced with the vectors. In one embodiment, the vectors are retroviral-based vectors that comprise a packaging signal, a viral inhibitor sequence, a splice acceptor and a splice donor site, a retroviral Rev binding site and a promoter sequence. The inhibitor sequence is located between the splice sites, which permit splicing of the subsequence from the vector nucleic acid in the nucleus of a cell. In particular embodiments, the viral inhibitor sequence encodes a ribonuclease such as a member of the pancreatic RNAse A superfamily. The invention also provides vectors that comprise a nucleic acid encoding an EDN, wherein the vector inhibits replication of a retrovirus in a cell transduced by the vector.

2. Rejections under 35 U.S.C. § 112, first paragraph

The rejection acknowledges that the specification is enabled for a cell transduction plasmid vector based on an HIV-lentiviral vector comprising a nucleic acid sequence encoding a retroviral packaging site, a splice donor, a splice acceptor, a retroviral Rev binding sequence and an IRES operably linked to a first viral inhibitor sequence located between the donor and acceptor sequence. Applicants note, however, that the claims drawn to these vectors do not recite a first viral inhibitor sequence integrated into the nucleus of the cell. The splice donor site and splice acceptor site permit splicing of the first viral inhibitor sequence from the vector nucleic acid in the nucleus of a cell. Applicants also note that the IRES is not a promoter sequence, but a ribosome entry site (*see, e.g.*, the specification at page 28 line 32 through page 29, line 14).

Claims 1-35, 41 and 42 were rejected as allegedly not enabled for limitations directed to subsequences of the viral inhibitor, splice donor and acceptor site and retroviral rev; or for an oncogene inhibitor that is an antibody binding to a ras protein or an RNase. The rejection also argues that because the specification does not teach each and every vector for all transgenes directed to all types of target cells, it would require undue experimentation to make any vector that will transduce any cell. Applicants traverse. For the reasons set forth below, the specification provides ample guidance to the skilled artisan to prepare the claimed vectors without undue experimentation. Moreover, the specification clearly meets the PTO guidelines for enablement, which set forth the standard for the scope of enablement when a large number of possible embodiments exists.

Recitation of subsequence

The rejection argues that the claims are not enabled for subsequences of the various regions of the vector as recited in the claims. However, the term "subsequence" is used in context of the vector nucleic acid. The definition of "subsequence" provided in the specification at page 12, lines 7-12 states that "subsequence" in the context of a particular nucleic acid sequence refers to a region of the nucleic acid equal to or smaller than the specified nucleic acid. The definition then provides an example: a viral inhibitor nucleic acid subsequence is a subsequence of a *vector nucleic acid*, because the vector includes additional components. Accordingly, the context of "subsequence" as recited in the claims is the vector, and indicates that the particular element is a subsequence of the vector. Applicants therefore request withdrawal of the rejection.

Claims drawn to a viral inhibitor that is an antibody binding to a ras protein or an RNase are taught in the application.

The rejection alleges that the specification does not teach construction of a transduction vector that further comprises an oncogene inhibitor that is an antibody to ras or an RNase. Applicants note that procedures for making the vectors are taught in the specification, *e.g.*, starting at page 17, line 4 through page 18, line 28. As evidenced by the various citations, these techniques are well known to those of skill in the art. Furthermore, the application teaches that oncogene inhibitors can be antibodies to ras or to an RNase molecule (*see*, *e.g.*, the specification on page 5, lines 3-4) and includes a definition of antibodies (*see*, *e.g.*, page 14, starting at line 22). Thus, the practitioner can identify each of these elements and, without undue experimentation, construct a transduction vector that includes the various elements using the knowledge in the art, *e.g.*, cloning techniques, and guidance provided in the specification. Applicants therefore request withdrawal of the rejection.

Undue experimentation is not required to produce the claimed vectors

The rejection alleges that because the specification does not teach each and every vector for all transgenes directed to all types of target cells, it would require undue experimentation to make any vector that will transduce any cell. In determining whether undue experimentation is required to practice the claimed invention, factors such as the amount of guidance presented in the specification and the presence of working examples must be considered (*see*, *Ex Parte Forman*, 230

USPQ 546 (Bd. Patent App. & Int. 1985) and *In re Wands*, 8 USPQ2d 1400 (Fed. Circ 1988). As described in *Wands*, "a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should precede" (*see*, *Wands*, 8 USPQ2d at 1404, quoting *In re Jackson*, 217 USPQ 804 (Bd. Pat. App. & Int. 1982). Applicants submit that the specification provides the necessary guidance for the skilled artisan to prepare and use the claimed vectors.

Applicants are not required to name each and every substituent that could possibly be used in a vector. As stated in MPEP § 2164.08 "not everything necessary to practice the invention need be disclosed. All that is necessary is that one skilled in the art be able to practice the claimed invention *given the level of knowledge and skill in the art*" (emphasis added). The transduction vectors as claimed in claims 1-24 include particular sequences: a retroviral packaging site, a splice donor site, a splice acceptor site, a retroviral Rev binding site and a promoter. These elements are taught in the specification (*see*, *e.g.*, page 9, line 28 through page 10, line 9 and page 27, line 27 through page 28, line 16) and well known to those of skill in the art. Similarly, a vector of claims 25-35 each include a sequence encoding an EDN protein operably linked to a promoter, wherein the vector inhibits the replication of a retrovirus in a cell transduced by the vector. Various expression vectors and promoters are also well known to the skilled practitioner (*see*, *e.g.*, Ausubel, cited in the specification at page 17). The application also teaches a variety of viral and/or oncogenic inhibitors (*see*, *e.g.*, the section "Viral and Oncogene Inhibitor" beginning at page 22). Clearly, although the practitioner has a number of options in selecting particular sequences to include in a cell transduction vector, the application provides guidance to one of skill in making those selections thereby indicating the direction in which experimentation should proceed. Thus, in view of the teachings of the application and the level of skill in the art, Applicants have provided sufficient guidance to enable one of skill in the art to make and use the vectors as claimed.

Applicants further submit that the rejection uses an erroneous standard to determine whether experimentation is undue. It states that the amount of experimentation required would include the trial and error determination of various types of modifications. In fact, whether large numbers of compositions (*e.g.*, transduction vectors) must be screened to determine if one is within the scope of the claims is irrelevant to an enablement inquiry. Enablement is not precluded by the necessity to screen large numbers of compositions, as long as that screening is "routine," *i.e.*, not "undue," to use the words of the Federal Circuit, *supra*.

Regarding the issue of enablement of nucleic acids, where a large number of possible embodiments exist, the PTO has provided express guidelines for examination. As set forth in the MPEP § 2168.08, a rejection of present claims for undue breadth is inappropriate where one of skill could readily determine any one of the claimed embodiments.

The standard is further explained in the Training Materials for Examining Patent Applications with respect to 35 U.S.C. § 112, first paragraph—Enablement Chemical/Biotechnological applications," section III.A.2.b.i(c). In the guidelines, the PTO specifically answers the question regarding scope of a nucleic acid composition claim left open by the Federal Circuit in *In re Deuel*, 34 USPQ2d 1210, 1216 (Fed. Cir. 1995). The claims at issue in *Deuel* were directed to any DNA encoding a specific amino acid sequence. Thus, a great number of nucleic acids were within the scope of the claims. The number was so great that a listing of all possible DNA encoding the protein was not practically possible. Similarly, the claims at issue in the instant application are directed to a large number of potential nucleic acid sequences.

In the guidelines, the PTO explained that "even though a listing of all possible DNA which encodes a given protein is a practical impossibility due to the enormous number of such nucleic acids, any particular sequence can be written by one of skill given the disclosure and the sequence can be ordered from a company that synthesizes DNA." In this manner, one of skill can readily determine any one of the embodiments. The PTO concluded that scope rejections such as the one hypothesized in Deuel should not be advanced.

Accordingly, in view of the teachings in the specification in combination with the state of the prior art, the amount of experimentation required to identify the claimed expression vectors is not undue even if large numbers of expression vector sequences are screened. Applicants respectfully request that the rejection be withdrawn.

Conservative modification of pBAR, pBAR-ONC and pBAR-EDN

Claims 20 and 26 were rejected as allegedly not enabled for any conservative modifications of pBAR, pBAR-ONC and pBAR-EDN. The rejection appears to argue that in the absence of a teaching each and every conservative amino acid modification, claims reciting conservative modifications are not enabled because it would require undue experimentation to determine the conservative amino acid substitutions in the BAR, ONC and EDN that would not alter the properties and/or phenotype of the polypeptide. Applicants traverse.

As discussed above, enablement does not require a teaching of every possible conservative modification, but must provide teachings such that one of skill can practice the claimed invention given the level of knowledge and skill in the art. The application meets this requirement. The substituents of the vectors BAR, ONC, and EDN are taught in the application. *See, e.g.*, page 16, lines 19-22, which teaches delta-gag, page 22, lines 15-30, which teaches various RNases, including onconase and EDN; and page 23, lines 10-24 which teaches Onconase and modified onconases. Furthermore, the application teaches conservatively modified variants (*see, e.g.*, page 13, lines 25-21), which are also well known to those of skill in the art. Accordingly, the application has provided ample guidance for the skilled practitioner to construct conservatively modified variants of the vectors without undue experimentation. Applicants therefore request withdrawal of the rejection.

Methods of transducing a cell

Claims 29, 36, and 38-42 were rejected as allegedly not enabled because they read on *in vivo* and *ex vivo* gene therapy. Applicants maintain that methods using the vectors of the invention are fully enabled. However, in order to expedite prosecution, the claims have been amended. Applicants therefore request withdrawal of the rejection.

3. Rejections under 35 U.S.C. § 103

Claims 1-35, 41 and 42 were rejected as allegedly obvious over Vile *et al.* (Vile) in view of Poeschla *et al.* (Poeschla). Vile is described as teaching a retroviral vector comprising a splice donor site, a splice acceptor site, and an IRES sequence. Poeschla is described as teaching retrovirus-mediated transfer of antiviral genes into $CD4^+$ or $CD34^+$ progenitor cells *ex vivo*, followed by infusion of the altered cell into recipients. Poeschla is further characterized as teaching catalytic antisense RNAs to disrupt the target RNA (which the rejection alleges functions as ribonucleases or RNAses) and a decoy, the rev response element. The rejection argues that all of the limitations of the claims are taught by Vile in view of Poeschla and that it would have therefore been *prima facie* obvious to combine the teachings to arrive at the claimed invention. The rejection further argues that one would have been motivated to combine the teachings because Vile taught the specific regarding vector construction and the splice sites, IRES and LTR sequence and Poeschla taught HIV-based lentiviral vectors. Applicants traverse. The cited art does not teach all of the elements of

the claims, nor does the rejection provide a proper motivation to combine the cited art such that one of skill could reasonably be expected to arrive at the claimed invention. Lastly, the obviousness rejection is inconsistent with the enablement rejections.

The rejection fails to establish a *prima facie* case of obviousness

In order to establish a *prima facie* case of obviousness, the rejection must demonstrate that: (1) there is some suggestion or motivation to modify the reference or combine the reference teachings; (2) there is a reasonable expectation of success: and (3) the prior art references suggest all the claim elements. *See, e.g.*, MPEP § 2143; *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). Further, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. (*see, In re Vaeck, supra*). None of these elements is satisfied by the cited references.

The Office Action cited art that does not teach or suggest all of the claim elements. For example, neither reference teaches a vector wherein a viral inhibitor subsequence is located between a splice acceptor site and a splice donor site, wherein, the splice donor site and splice acceptor site permit splicing of the viral inhibitor sequence from the vector nucleic acid in the nucleus of a cell. Neither reference teaches a vector that is translocated to the cytoplasm in the presence of Rev wherein splicing of the viral inhibitor sequence is inhibited by Rev. Even assuming that an antisense RNA with catalytic activity could be viewed as an RNase, neither reference teaches a ribonuclease that is a member of the pancreatic RNAse A superfamily, nor the particular RNAse A superfamily members EDN and Onc. Neither reference teaches a transdominant gag, transdominant tat and transdominant Rev. Neither reference teaches a vector that further comprises a cell binding ligand that is transferrin, c-kit ligand, an interleukin , and a cytokine. Neither reference teaches a second viral inhibitor. Neither references teaches a vector nucleic acid packaged in a liposome, neither reference teaches a retroviral particle pseudotyped for transduction into hematopoietic stem cells. Neither references teaches a viral inhibitor that is an oncogene inhibitor. Clearly, in the absence of the suggestion or teaching of all of the claim elements, the references cannot be combined to arrive at the claimed invention.

Furthermore, even assuming *arguendo* that the prior art did teach all of the claim elements, neither reference suggests the claimed invention. Moreover, the rejection has failed to specifically identify the principles, known to one of ordinary skill in the art, that suggests the

claimed invention (*In re Rouffet*, 47 USPQ2d 1453 (Fed. Cir. 1998)). The rejection merely appears to argue that one of skill would have been motivated to combine the cited art simply because specific elements are set forth in the cited art. Accordingly, the rejection has not established a motivation to combine the references. Applicants therefore request withdrawal of the rejection.

The invention cannot lack both enablement and be obvious over the prior art

Finally, the clams cannot be obvious over the prior art and yet not be enabled by the specification and the art. The legal relationship between obviousness and enablement is well established. To render an invention "obvious" the prior art as a whole (*i.e.*, all of the references in the prior art, in combination) "must enable one skilled in the art to make and use the apparatus or method," before that apparatus or method can be considered obvious. *See Beckman Instruments Inc. v. LKB Produkter AB*, 13 USPQ2d 1301, 1304 (Fed. Cir. 1989). The basic question regarding the relationship between enablement and obviousness is whether the prior art is such as to place the invention in the hands of the public, without the benefit of an applicant's disclosure. *See, e.g., In re Brown*, 141 USPQ 245 (C.C.P.A. 1964), and *In re Payne*, 606 F.2d 303, 314 (C.C.P.A. 1979) ("References relied upon to support a rejection under 35 U.S.C. § 103 must provide an enabling disclosure, *i.e.*, they must place the claimed invention in the possession of the public.")

On the other hand, for enablement purposes, an application is considered for what it teaches, in combination with the prior art. The Examiner is again reminded that "the test of enablement is whether one skilled in the art could make or use the claimed invention from the disclosures in the patent coupled with information known in the art without undue experimentation." See MPEP § 2164.04, citing *United States v. Telectronics, Inc.*, 8 USPQ2d 1217 (Fed. Cir. 1988). Indeed, as stated above, "a patent need not teach, and preferably omits, what is well known in the art." *See Spectra-Physics, Inc. v. Coherent, Inc.*, 3 USPQ2d 1737 (Fed. Cir. 1987). Before an application can be non-enabling, the application, in combination with everything that is known in the prior art, must not teach how to practice the invention.

It should be immediately apparent that there is no way that an invention can be both obvious and not enabled. To be obvious, the prior art, even without the benefit of an applicant's disclosure, must teach one of skill how to practice the invention. To not be enabled, the application, in combination with the prior art, must not teach one of skill how to practice the invention. It is simply not possible for Vile *et al.* + Poeschla *et al.* to teach one of skill how to practice the

invention, while Vile *et al.* + Poeschla *et al.* + the present application do not. In essence, the Examiner's argument is that one of skill would not known whether the invention works, or how to practice it, but that, if it does work and if one of skill did know how to practice it, it would be obvious.

This logical non sequitur has been expressly disapproved by the Federal Circuit. *See In re Dow Chemical*, 5 USPQ2d 1529, 1531 (Fed Cir. 1988). As indicated by the Federal Circuit in Dow, simultaneously pursuing both arguments demonstrates substitution of a proper obviousness analysis with an "obvious to try" standard, which has been repeatedly rejected by the Board of Appeals and the Federal Circuit.

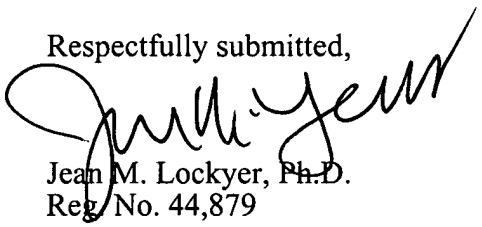
Applicants therefore request withdrawal of the rejection.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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APPENDIX A
MARKED UP VERSION OF AMENDED CLAIMS

11. (amended) The cell transduction vector of claim 9, wherein the vector nucleic acid further encodes a second viral inhibitor, wherein [transcription] expression of the second viral inhibitor [nucleic acid] is controlled by the IRES.

37. (amended) [The] A method of [claim 26] transducing a cell with a nucleic acid encoding a viral inhibitor comprising contacting the cell with the cell transduction vector of claim 1, wherein the cell is transduced *in vitro*.

38. (amended) A method of inhibiting the growth of HIV in a cell comprising transducing the cell with the cell transduction vector of claim 1, wherein the cell is transduced *in vitro*.

40. (amended) The method of claim [39] 38, wherein the cell is selected from the group of cells consisting of transferrin receptor$^+$ cells, CD4$^+$ cells and CD34$^+$ hematopoietic stem cells.

APPENDIX B
CURRENTLY PENDING CLAIMS

1. (as filed) A cell transduction vector comprising a vector nucleic acid encoding:

a retroviral packaging site;

a first viral inhibitor subsequence;

a splice donor site subsequence;

a splice acceptor site subsequence;

a retroviral Rev binding subsequence; and,

a promoter subsequence;

wherein:

the first viral inhibitor subsequence is located between the splice donor site subsequence and the splice acceptor site subsequence;

the splice donor site subsequence and the splice acceptor site subsequence permit splicing of the first viral inhibitor subsequence from the vector nucleic acid in the nucleus of a cell; and,

the promoter subsequence is operably linked to the first viral inhibitor subsequence.

2. (as filed) The cell transduction vector of claim 1, wherein the vector nucleic acid further encodes a retroviral Rev binding subsequence, wherein the vector nucleic acid is translocated to the cytoplasm in the presence of a Rev protein, and wherein splicing of the first viral inhibitor sequence is inhibited by Rev.

3. (as filed) The cell transduction vector of claim 2, wherein, the retroviral Rev binding subsequence is an HIV RRE sequence.

4. (as filed) The cell transduction vector of claim 1, wherein the first viral inhibitor comprises a nucleic acid subsequence encoding a ribonuclease selected from the pancreatic RNAse A superfamily.

5. (as filed) The cell transduction vector of claim 1, wherein the first viral inhibitor comprises a nucleic acid subsequence encoding a ribonuclease selected from the group of ribonucleases consisting of Onconase, modified Onconase, and EDN.

6. (as filed) The cell transduction vector of claim 1, wherein the first viral inhibitor subsequence encodes a transdominant protein selected from the group of transdominant proteins consisting of transdominant Gag, transdominant Tat, and transdominant Rev.

7. (as filed) The cell transduction vector of claim 1, wherein the vector further comprises a cell binding ligand selected from the group consisting of transferrin, *c-kit* ligand, an interleukin and a cytokine.

8. (as filed) The cell transduction vector of claim 1, wherein the promoter is selected from the group of promoters consisting of a retroviral LTR promoter, a constitutive promoter, an inducible promoter, a tissue specific promoter, a CMV promoter, a probasin promoter and a tetracycline-responsive promoter.

9. (as filed) The cell transduction vector of claim 1, wherein the vector further comprises an encephalomyocarditis virus internal ribosome entry site (IRES).

10. (as filed) The cell transduction vector of claim 1, wherein the vector nucleic acid further encodes a second viral inhibitor.

11. (amended) The cell transduction vector of claim 9, wherein the vector nucleic acid further encodes a second viral inhibitor, wherein expression of the second viral inhibitor is controlled by the IRES.

12. (as filed) The cell transduction vector of claim 1, wherein vector nucleic acid further encodes a multicistronic mRNA with a first open reading frame and a second open reading frame, which multicistronic mRNA comprises an IRES sequence which directs translation of the second open reading frame in a cell.

13. (as filed) The cell transduction vector of claim 11, wherein the first open reading frame encodes a viral inhibitor.

14. (as filed) The cell transduction vector of claim 1, wherein the vector comprises a retroviral particle.

15. (as filed) The cell transduction vector of claim 1, wherein the vector nucleic acid is packaged into an HIV particle in a cell infected by a wild-type HIV.

16. (as filed) The cell transduction vector of claim 1, wherein the vector nucleic acid is packaged in a liposome.

17. (as filed) The cell transduction vector of claim 14, wherein the retroviral particle is pseudotyped for transduction into hematopoietic stem cells.

18. (as filed) The cell transduction vector of claim 1, wherein the vector further comprises a pharmaceutical excipient.

19. (as filed) The cell transduction vector of claim 1, wherein the vector nucleic acid further encodes a reporter gene.

20. (as filed) The cell transduction vector of claim 1, wherein the cell transduction vector is selected from the group of cell transduction vectors consisting of pBAR, pBAR-ONC, pBAR-EDN and conservative modifications thereof.

21. (as filed) The cell transduction vector of claim 1, wherein the viral inhibitor is an oncogene inhibitor.

22. (as filed) The cell transduction vector of claim 1, wherein the vector further comprises an oncogene inhibitor.

23. (as filed) The cell transduction vector of claim 22, wherein the oncogene inhibitor is a nucleic acid encoding an inhibitor selected from the group of inhibitors consisting of an antibody which specifically binds a Ras protein and an RNAse.

24. (as filed) The cell transduction vector of claim 22, wherein the oncogene inhibitor is an RNAse from the RNAse A superfamily.

25. (as filed) A cell transduction vector comprising a nucleic acid subsequence encoding an EDN protein, which subsequence is operably linked to a promoter, wherein said cell transduction vector inhibits the replication of a retrovirus in a cell transduced by the cell transduction vector.

26. (as filed) The cell transduction vector of claim 25, wherein the vector is pBAR-EDN, or a conservative modification thereof.

27. (as filed) The cell transduction vector of claim 25, wherein the cell is a $CD4^+$ cell

28. (as filed) The cell transduction vector of claim 25, wherein the cell is a stem cell.

29. (as filed) The cell transduction vector of claim 25, wherein the vector inhibits the replication of HIV in the cell.

30. (as filed) The cell transduction vector of claim 25, wherein the vector nucleic acid is packaged in a retroviral particle.

31. (as filed) The cell transduction vector of claim 25, wherein the vector is packaged in a liposome.

32. The cell transduction vector of claim 25, wherein the vector comprises a cell binding ligand selected from the group of cell binding ligands consisting of transferrin, kit-ligand, an interleukin, and a cytokine.

33. (as filed) The cell transduction vector of claim 25, wherein the vector nucleic acid further encodes a subsequence encoding a retroviral chromosome integration subsequence.

34. (as filed) The cell transduction vector of claim 25, wherein the vector further comprises a multicistronic mRNA which encodes a first open reading frame and a second open reading frame, which multicistronic mRNA is operably linked to a promoter, wherein the dicistronic mRNA comprises a subsequence encoding EDN.

35. (as filed) The cell transduction vector of claim 25, wherein the promoter is selected from the group consisting of a tetracycline responsive promoter, a probasin promoter, and a CMV promoter.

36. (canceled) A method of transducing a cell with a nucleic acid encoding a viral inhibitor comprising contacting the cell with the cell transduction vector of claim 1.

37. (amended) A method of transducing a cell with a nucleic acid encoding a viral inhibitor comprising contacting the cell with the cell transduction vector of claim 1, wherein the cell is transduced *in vitro*.

38. (amended) A method of inhibiting the growth of HIV in a cell comprising transducing the cell with the cell transduction vector of claim 1, wherein the cell is transduced *in vitro*.

39. (canceled) The method of claim 38, wherein the cell is isolated from a mammal, and wherein the method further comprises introducing the cell into a mammal.

40. (amended) The method of claim 38, wherein the cell is selected from the group of cells consisting of transferrin receptor$^+$ cells, CD4$^+$ cells and CD34$^+$ hematopoietic stem cells.

41. (as filed) A cell comprising the cell transduction vector of claim 1.

42. (as filed) The cell of claim 41, wherein the cell is selected from the group of cells comprising CD4$^+$ cells, CD34$^+$ hematopoietic stem cells, and transferrin receptor$^+$ cells.